TMDL Program
Five Year Progress Report

The Virginia Department of Environmental Quality monitors the state's rivers, lakes and tidal waters for pollutants every year to determine if the public can use them for swimming, fishing and drinking. If pollution amounts are too high, the waters cannot support their designated uses and fail to meet Virginia water quality standards. These waters are considered "impaired."

Since 1999, DEQ has developed plans, with public input, to restore and maintain the water quality of the impaired waters. These plans establish a "total maximum daily load," or TMDL, for the impaired waters. A TMDL represents the total amount of a pollutant a water body can contain and still meet water quality standards. DEQ also develops a TMDL implementation plan and works with partners to reduce pollution to the level required by the TMDL.

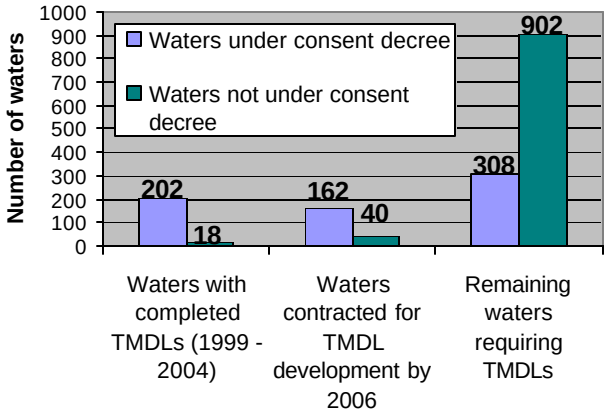
Through a consent order, a federal court established a schedule for TMDL development in Virginia through 2010 for waters identified as impaired since 1998. For other waters, DEQ schedules the development of TMDLs within eight to 12 years of finding the waters impaired. In January 2005, DEQ in cooperation with the Department of Conservation and Recreation and the Department of Mines, Minerals, and Energy released a report that describes the progress of TMDL development, implementation plans and the application of best management practices in Virginia's TMDL program.

Progress and future goals

TMDL development

The Virginia TMDL program has successfully met the demands of a rigorous development schedule. The program completed 220 TMDLs from 1999 to 2004, and more than 200 have been contracted for completion by 2006. Just over 300 consent decree waters remain and are scheduled for TMDL development by 2010. The program has scheduled TMDL development for the remaining 902 non-consent decree waters on the impaired waters list within eight to 12 years of when the water was designated impaired.

Status of TMDL development for impaired waters



To develop a TMDL, the state considers:

- Naturally occurring concentrations of pollutants in the impaired waters.
- Pollution from fixed locations, such as a pipe or ditch (point sources).
- Pollution sources without a single point of origin, such as agricultural activities and urban areas (nonpoint sources).
- Seasonal variations.

Implementation plans

Once a TMDL has been completed, it is submitted to the U.S. Environmental Protection Agency for approval. DEQ then develops a TMDL implementation plan. The plan describes ways to reduce pollution levels in the stream, and includes a schedule of actions, costs and monitoring. The TMDL program has completed six implementation plans covering 18 TMDLs and scheduled 16 implementation plans covering 42 TMDLs for completion by 2006. Completion of implementation plans for the 544 consent decree waters and 902 non-consent decree waters will be dependent upon available funding and staff.

Implementation plans		
	Number of plans	Number of TMDLs covered
Completed	6	18
Scheduled	16	42
	Number of consent order waters	Number of non-consent order waters
Remaining	544	902

Best management practices

The program and its partners work to achieve a TMDL by reducing pollution according to the best management practices established in the implementation plan. Best management practices are effective and practical ways to prevent or reduce pollution from nonpoint sources to ensure water quality. They could range from repairing septic systems and establishing storage areas for animal waste to planting vegetation.

The TMDL program has been working in six watersheds, and five have shown improvement in water quality. It is too early in the implementation process to determine if water quality is improving in the sixth watershed. The portion of the watersheds covered by the implementation plans is about 158,663 acres or 248 square miles of Virginia's landscape. In most watersheds, local soil and water conservations districts or the Virginia Department of Conservation and Recreation have taken the lead in overseeing the implementation of the best management practices. To determine the success of the practices on water quality, DEQ monitors the impaired streams.

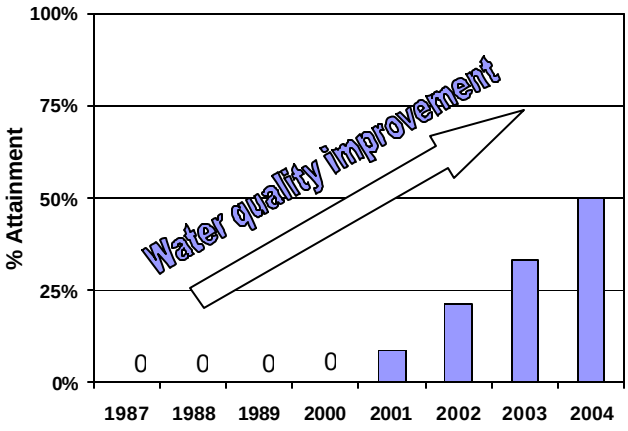
The table below gives an overview of the six watersheds and the progress made in each.

Water quality improvement in six watersheds		
Watershed/ Location of area covered by implementation plan	***Pollutant source***	***Water quality improvement***
North River/Rockingham County	Agricultural, non-point	Some improvement
Middle Fork Holston River/Washington County	Agricultural, non-point	Moderate improvement
Blackwater River/Franklin County	Agricultural, non-point	Some improvement
Four Mile Run/Arlington & Fairfax counties	Urban, non-point	Too early to determine
Middle Creek/Tazewell County	Coal mining activities	Definite improvement
Quail Run/ Rockingham County	Point source	Definite improvement

Voluntary efforts have been a key to success in these watersheds. The Middle Creek is a successful example of Virginia's proactive approach to water quality improvement. This approach aims to clean impaired water bodies through voluntary methods in order to avoid the costly and time-consuming process of developing TMDLs and implementation plans. In this watershed, water quality restoration was driven by stakeholder interest or other resource management programs that preceded TMDL completion.

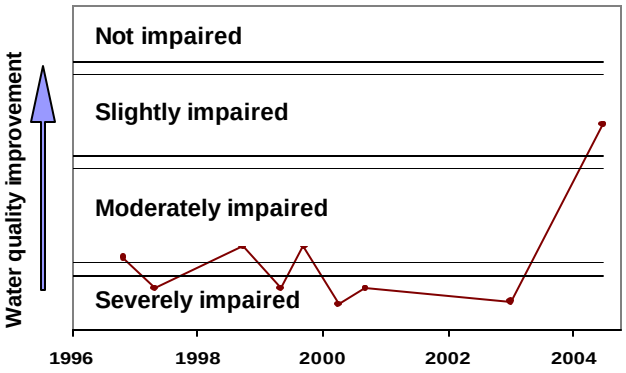
Dozens of voluntary and government-funded best management practices are used throughout the watersheds. For example, there are over 100 best management practices in use in the Middle Fork Holston River watershed that have resulted in water quality improvements. The following diagram illustrates the improving bacteria violation rates in one of the streams located in the Middle Fork Holston River watershed.

Hutton Creek bacteria conditions



In some cases, pollution can be traced to a single point source, as in the Quail Run watershed. In this watershed, water quality restoration was driven by the upgrade of the Massanutten Sewage Treatment Plant. The most recent biological samples collected in fall 2004 show the best results since DEQ began monitoring the stream.

Quail Run biological scores



Funding and future needs

The estimated total cost to develop TMDLs through 2010 is about $10.7 million. DEQ projects that, assuming level funding sources and accurate estimates, the agency will be able to meet the consent order schedule and complete the development of the TMDLs required by 2010.

Estimated total costs through 2010	
Total costs of consent order TMDLs	$5,065,000
Total costs of non-consent order TMDLs	$429,000
Bacteria source tracking costs	$1,003,200
Staff	$4,232,500
Total costs for TMDL development	$10,729,700

There do exist, however, several unknown factors that could pose difficulties in meeting the TMDL schedule. These factors include the quantity of non-consent order waters or impairments included in the TMDL schedule, implementation plan development costs, unforeseen complexities and modeling costs for more complex TMDLs. Challenges also exist in the development of TMDLs for complex pollutants such as mercury, and in the maintenance of a growing TMDL pool with the potential for future TMDL modifications to accommodate permit needs.

A growing challenge for the program is the transition from developing TMDLs to actual water quality improvements. Because there are no new authorities for enforcing TMDLs, it has been Virginia's expectation to implement TMDLs using existing programs and funding sources. Existing resources include permits from DEQ and the Virginia Department of Mines, Mineral and Energy that limit discharges to state waters. These programs are utilized when stream impairments are attributed to a permitted facility. For non-permitted activities, Virginia's approach has been to use incentive-based programs such as the Virginia Agricultural Cost Share Program and the State Revolving Loan Fund. Virginia also offers dedicated funding for the implementation of best management practices in watersheds with approved implementation plans.

Despite the challenges, Virginia's TMDL program has shown that properly applied and maintained best management practices result in measurable improvements in water quality. The information provided in the annual report on Virginia's TMDL program will help to identify strategies that will ensure continued success. The report is available on the DEQ web site at www.deq.virginia.gov/tmdl.